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## THE INTERRELATION OF HOUSING AND CITY PLANNING

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Over much the greater part of its area, the physical city is the result of the coördinated action of housing and city planning, each also acting and counteracting upon the other. Each is affected by the operation of forces that do not play upon the other, but each is subject to influences that also control or affect the other. Some approximate definition of these two terms is necessary. Such definitions are doubtless given in the papers that precede or succeed this one, but both city planning and housing are in a state of flux, and individuals use the terms with different interpretations.

Housing covers places where people live—places that used to be called “homes” and that still are called homes in the country and in parts of cities. But a flat does not have that sense of family life separated and shut off from all the world outside, that sense of peace and happiness and aloofness, and comfortable security, that the word “home” brings to one that has known an abiding place other than a flat. But, nevertheless, it is the many-inhabited flat, the tenement, that has caused the rise of the housing inquiry, an inquiry that is gradually creating a knowledge that has something of the character of a science. The forms of living are too various to permit such an investigation to develop a strict science, but certain of the details of housing, such as the amount of cubic space of air that each room should contain per each individual, are rapidly becoming, and in some cases have become, scientifically understood; and that understanding is being formulated into statutory law. Housing is not generally regarded as applying to buildings intended for business, commerce, manufacturing, transportation or similar business.

City planning is concerned primarily with what the public authorities do, or with what they can control, such as the street and other transportation systems, the recreation system, the dock system. It is in certain details that its direct action upon housing is most apparent.

Supposing that the best city plan in its widest acceptation were realized, bad housing conditions would still be constantly arising. Room overcrowding and personal filth cannot be prevented by city planning; these are examples of cases where housing is only remotely connected with city planning, and where many other causes,—education, physical fitness, the standard of living of the community, for example—have more direct bearing. Nevertheless the physical city has an effect on the physique of its inhabitants—a city like Chicago with Chicago's recreation centers, will have fitter citizens and fewer unfit ones than a city like Chicago without such playgrounds. It is in large measure true that the saying, "the condition of the sty depends upon the pig," applies to the surface problems of housing. Put a public-school-educated, healthy family into a filthy house, and it will be a different dwelling by the morning. Obviously, therefore, so far as city planning affects the physical citizen it will have a relation to housing. Other examples of such relationship, less remote and more remote, could readily be given, were not the space required for the phases where the action and interaction of housing and city planning are direct, and consequently more easily demonstrated and more easily made to coöperate towards good results.

City planning will be shown to have its effect on the structure of the house, not the use or abuse of it after its construction. The chief agencies in creating this effect are transportation, lot dimensions and heights of buildings, as provided for or permitted by the city plan.

All of these have to do with the space of the city that is not to be built upon. A chief function of city planning is to provide open space, whether in the form of parks or playgrounds, streets or parkways, court-yards or alleys. The common function of these diverse open spaces is to let sunlight and fresh air into the city—each open space also provides for other necessities of city building, but all provide these essentials. An important function of housing, perhaps the most vital, is to let sunlight and fresh air into the house. Obviously you cannot have fresh air within the house if there is none without, and hence city planning and housing are from this point of view the necessary complements of each other.

The fundamental factor in city planning is transportation, by which I mean not only the system of rapid transit, but the system of

streets. Streets are the only indispensable method of transferring an individual from one point to another, the particular means, whether by foot, by horse-drawn vehicle, motor, trolley car, subway, or elevated, being a secondary consideration, all the improved methods depending ultimately upon the street. True, subways may, and frequently ought, and in two cases, the London tuppeny tube and the Harvard-Boston line do, leave the lines of the street, but generally they follow them.

The directness of the dependence of housing on transportation in a city of large size will be shown shortly by an unfortunate example, but first as to the qualifications as to size. As long as a community is so little extended that the laborer can live within an easy walk of his place of labor, the facilities of street and railroad transit systems will not be reflected in his home. But when the community passes beyond that stage, the situation changes. Ebenezer Howard, who is generally regarded as the originator of the English garden city idea, the chief modern contribution of that nation to city planning, quoted approvingly a recent article that declared that what is needed is "England planning," in order that "the problem of the transport of the worker may be most economically and happily solved by bringing the distance necessary to be traveled within easy range of a walk or a bicycle ride." To do so, it will be necessary to create many small cities and to limit them arbitrarily, as has been done in Letchworth. Such methods do not savor of practicableness for the condition that confronts us, which is indeed not a theory. But the suggestion serves to emphasize the distinction between small and great communities so far as the effect of transportation on their housing is concerned, a distinction that is really one of kind and not merely of degree.

The dependence of the workman in the big city upon transportation for the character of his home, and indeed for the possibility of his owning his home, will be evident from a moment's thinking of the places where workmen live in New York and where they live in Philadelphia. New York for years offered no opportunity to get out of the straight jacket made by its bounding rivers, and the workman who earns \$1.75 or \$2 a day, in the first place, must live in a six-story flat, with no yard of his own for his children to use for play, and hence, for bodily and mental health; and in the second place, he cannot aspire to own the property—even the thought of doing so

seems absurd. But the Philadelphia laborer lives in a two-story, single-family (*his family*) house, and can aspire to own it, and does so to the extent of 20 per cent—the statistical total being 22 per cent, including persons who are not covered by the general definition of the word "workman."

The direct dependence of housing upon transportation is shown by the same city. In a report to the City Parks Association of Philadelphia, two years ago, the author called attention to this fact as follows:

Upon transportation depends of course the ease, rapidity and flexibility with which commerce flows, but transportation affects vitally not only the commerce of the city, but its housing conditions as well. We have had unfortunately in Philadelphia recently a sharp reminder of this truth, a reminder that has taken a form, that threatens the extension of our system of two-story, single-family homes. When the Market Street Subway and Elevated Railroad was built, it brought within fifteen or twenty minutes of the center of the city a considerable area of unimproved ground in West Philadelphia, with the result that the land appreciated in value so much, that the ordinary workman's house, two stories in height and occupied by one family, would not bring a commensurate income. The result is that two-flat, two-story houses have been erected in considerable numbers within the sphere of influence of the subway-elevated railroad. In order to prevent this result the transportation facilities of the city should at the same time have brought other large areas into competition. If land to the southeast, the south, the southwest, the northwest, the north and northeast, had been brought within fifteen or twenty minutes of the City Hall, the evil result in West Philadelphia would not have followed. The system of two-story, single-family houses can continue to exist only so long as it brings a fair return on the value of the investment. That value can be kept down only by competition. If it is not kept down, the system of two-story single-family houses will inevitably give way.

There is no use blinking the fact, that these two-family flats in West Philadelphia portend evil to the working classes of the community and to the local body politic. If two families can live in two-story flats, why not erect a third story for a third family? With the ground purchased and the supporting stories already built, the third story will not cost much in addition, and the rent will be almost as high as that obtained for each of the other two stories.

This argument cannot fail to bring its disastrous results in the near future, unless the family, which otherwise might occupy that third story, can get a whole house to itself for about the same rent.

Therefore by our city planning we must see to it that transportation facilities are increased with such regularity and that new building areas are made available in such abundance, that the values of land are kept low enough for the workman to be able to own his own home. Any system of city planning that fails to bring a home owned by himself within reach of the day lab-

orer is a bad system, bad for the workman, worse for the community. There is undeniably a spirit of unrest throughout the community, a spirit of change, naturally brought about by the laudable determination of labor to secure and its success in securing a larger share of the wealth it produces. We rejoice that this is so, but we must not ignore the fact that other changes will result. The best assurance that those changes will be made considerately, conservatively and with a due regard to the rights of all, is to make it possible for each laborer to secure a home of his own. But who can foretell the ultimate result of conditions that will generally force workmen and their families into many-family tenements?

Transportation by means of an adequate system of direct thoroughfares, plus an equally adequate system of transit facilities on the surface and below the surface, must be provided, and this is the work of the community. No work more intimately concerns each one of us.

The necessity for this improvement in transportation is voiced in a recent parliamentary blue book by declaring that what is needed is a transit system that offers rapidity of carriage, shortness of intervals between trains, and cheap rates.

The "city plan" was at one time understood to mean the plan of the city streets—the city map of the news stand. It was regarded as an uninteresting, negligible thing. It is now known to be of primary importance in city building. When one street is plotted, two things are done: its distance from or nearness to the nearest parallel street is determined and the depth of the lots fronting upon it is also reduced to a choice within limits so narrow that it is also determined. These results necessarily follow for these reasons: If the street is only twenty feet from its nearest parallel street, a distance that has certain advantages and has been advocated for certain sections where the poorest live, there will be only one lot between them. If the distance is only forty feet there will also be only one lot between the streets. If the distance is 80 feet there may be one lot—or possibly two of about 40 each; if one is larger than 40, the other will be smaller. As the distance between the streets increases, the depth of the two lots will correspondingly increase until the parallel streets are so far apart that a third is opened between them. The prevailing rule in New York is that the streets are 200 feet apart making the lot depths 100 feet deep; and the prevailing rule in Philadelphia is that the parallel streets are from 100 to 150 feet apart, with proportionately smaller lot depths.

The New York rule has worked badly, a large part of the bad result being due, however, to New York's straight jacket. The Phila-

delphia rule, for a city of a million and a half, has worked well. If it were a city of only 50,000 people, the monotonous rows of similar houses would be inexcusable. Even as it is, their monotony could easily be avoided, but their small "oblong-box" formation—like "shoe boxes stood on their sides"—has made it possible for a workman to own one of them together with a yard, and to call the whole thing "my home."

The distance between parallel streets has been shown to bear directly on the lot depths. The distance between the streets that run at right angles to these streets affects, but less necessarily and directly, the lot widths. If an operator wishes to erect forty houses between two streets, their distance apart will affect their widths to a slight extent.

But the widths of the streets themselves have a very important bearing on the housing system. In some of the western cities, the average width of streets is said to be over 100 feet. This takes from the land that might have been used either to support buildings, to make yards for them, or to make public open spaces, an inexcusably large proportion of the area of the city; it invites unnecessarily wide paving at a useless increment in the original cost and in subsequent maintenance; and it increases length of transit, creating cities of "magnificent distances" and malodorous slums. There is not a city in the land where unnecessarily wide paving has not been done on many streets. Numerous streets are too wide and many are too narrow.

One of the best contributions of recent city planning publications has been the discussion of the desirable widths of streets from house line to house line, and the proper subdivisions of their cross sections so as to provide for attractive and beautiful streets, with an elasticity capable of subjecting a greater paving area to the use of the traffic that will be demanded by a minimized reduction in the attractiveness of the streets. The general recognition of the need of wider thoroughfares for traffic, and smaller by-ways for residences, has been one of the conclusions from this discussion that is sure to bear most valuable results, including improved housing conditions on the byways.

But, looked at broadly, the essence of the interest of housing in the widths of the streets on the city map is the amount of space left for building. The percentage of the built-up area of the city

turned over to travel never fails to surprise those who have not investigated the subject. It averages more than one-third. In Washington, the street area combined with that of the parks and the grounds around public buildings reaches the maximum, with 54 per cent of the total area of the city—less than half of the property remains for housing, and for buildings of all kinds. In old Philadelphia the percentage of the street area alone is about 36 per cent. In the region where the two-story house prevails, with the minimum lot of 14 feet by 41 feet, the percentage is 40. In outlying areas the tendency has been to make wider streets, thus increasing that percentage.

In an address before the National Housing Association, the writer stated:

In a particular instance it may be very difficult indeed to trace the connection between the physical condition of the house and the relation the total area of the street system bears to the total area of the built-up sections of the city; to say that 984 "X" Street is bad because 50 per cent of the area of the city is devoted to streets instead of a much smaller area; just as it may be difficult to show that a bad transportation system has contributed a definite amount of evil to that house. But it is equally difficult to say of any one death that it would not have occurred if the death rate of the city had been 5 per thousand instead of 15 per thousand. None of us has that wisdom. But we all have wisdom to know that if the death rate is 15 per thousand when it ought to be and can be, and in some places is, 5 per thousand, then 10 lives per thousand are being sacrificed every year, though we may not be able to say this particular life was so sacrificed. And so in housing, if transportation or the street area is not what it ought to be, we will know that evil conditions in housing generally are due to bad city planning though we may not be able to say that the bad housing at 984 "X" Street is due to it.

Both the width of streets and distance between parallel streets are the result of fashion and cause fashion. It is difficult and perhaps it would be academic, to determine which arises first, the habit of erecting a particular kind of dwelling, and making the lot fit, or the habit of laying out the particular lot and making the dwelling fit. In New York, did the 100-foot lot cause the building, or the building the 100-foot lot? Here we can answer. The plasterer who laid out New York above 14th Street with his trowel placed at right angles to the position it should have had, determined the lot depth, and the house had to be made to fit it. But how about elsewhere? What caused the two-story house on the average 14 by 50-foot lot

in Philadelphia? Which came first? Was it the city plan that caused the fashion, or the fashion that caused the city plan?

The inquiry into this subject would be interesting, but it is not so vital, being historical, as the inquiry whether the city plan can turn a bad fashion into a good one. I believe in the long run it can. This appears indeed to be in the proving in England. "Garden cities" are laid out primarily to surround each house or each unit by gardens. More space was required for houses in comparison with the area of streets. The street map was therefore affected and a new system had to be adopted. That new system in turn created conditions that defied old methods of building workmen's dwellings—a defiance that doubtless can be overcome by economic demands—but, nevertheless, a defiance that has for the time being put fashion to flight. I believe that a garden city scheme of streets would ultimately break up the Boston three-decker and then eliminate it, and that it would break up the monotony of the Philadelphia two-story home and then improve it.

The street system has one phase that is unusually interesting and difficult to handle. This is the change that is constantly taking place in the centers or sub-centers of cities. The housing area is continually surrendering to the business area, and the system desirable for the one is not that needed for the other. "The only permanent thing is change." To meet these conditions, the only feasible plan is to secure the main thoroughfares and then to permit the obliteration of minor streets promptly when need arises. Reconstruction will be a continuous need—and a continuous source of great strength and betterment for the city.

There is an object that is aimed at in English town planning that depends for its ultimate success either on the more or less Utopian idea of many small towns or on decided improvement in transportation. This is the fixing of the legal maximum number of houses at twelve to the acre. How great a revolution this would be is shown by the fact that in London there are some areas where the houses are 54 to the acre. In Philadelphia they are over 42 to the acre in the region of the minimum 14 by 40-foot lots on the minimum street of 40 feet width. If this number of houses were to be spread out to be only twelve to the acre, the amount of ground covered would be three and a half times as great—an improvement that would be wonderful. But the cost of transportation would be greater. The

car service would be over a longer route. The long rider would ride farther, and the short rider would also ride farther. The cost of the sewer system, and of all the street works would be greatly increased. I do not mean to say that a decided reduction in the number of houses per acre cannot be secured. We are working toward that end. I merely cite the difficulties, to show how intimately city planning and housing are bound up together.

The sewer system is of course a fundamental, both of city planning and housing. So is the water system. The house is the physical meeting point of the three problems, water supply, housing, and sewage. Water enters, or ought to enter, the house as pure water; it leaves it as sewage. In Philadelphia the largest physical need of housing is the construction of \$6,000,000 worth of sewers. All cities should prevent the erection of houses until the water and sewer pipes have been laid. This can be done by direct legislation as an exercise of the police power. In order to avoid unnecessary hardship, in cities where this is not now law, the requirement should be introduced gradually.

Height and open space regulations concern both housing and city planning. If buildings cannot expand laterally they will grow perpendicularly—hence New York. Conversely, if you limit their heights, they will expand laterally—hence they will cover more ground for which the plans of the city must consequently be prepared. Each subject is of vast importance. But space prevents their adequate consideration here. Suffice it to say that, so far as the limitations of the heights of tenements is concerned, that will doubtless be covered by other papers in this series. So far as the limitation of the heights of office buildings and other structures is concerned, that is mainly a matter of city planning, affecting housing conditions chiefly as it affects transportation. If a vast aggregation is to work on an area half a mile square, the greater part of the day-time population of that area will have to travel farther than if the aggregation were spread out, or were broken up into a series of much smaller aggregations. It should be borne in mind also that the living conditions of men and women are just as important in the day-time as at night—in shop, or office, as in home or flat. It is becoming generally agreed that the percentage of lot not occupied by buildings should depend on the height of the buildings. So far as city planning is concerned this will affect the area that the city will cover.

The limitation of the number of houses per acre and of the height to which each may reach is made by the German zoning system to depend upon the distance from the center of the city. The area contained within each successive mile zone is much greater than its immediate predecessor, as it has a much greater perimeter. Hence the distribution of the population by these processes does not in fact increase the transportation difficulties in the direct ratio of distance from the center of the city. The German zoning system has yet to be tried in this country, though acts to legalize it were introduced in the Wisconsin Legislature during the past year. The case of *Welch vs. Swasey* (214 U. S.) in effect upheld the districting of Boston into four zones so far as height regulation is concerned. In Pennsylvania, cities may secure forest belts. News from California, which I have not yet had the opportunity to substantiate, is that a zoning of Los Angeles for certain purposes has been upheld by the state supreme court. The nucleus of the idea is thus already Americanized.

The duty of the housing expert and of the city planner alike is to see to it that the city population of the future, when it is twice as large as at present—a time less than thirty years off—is spread over more than twice the area of the present city. The whole tendency in the opposite direction is toward concentration. It is our duty, and our great opportunity of service, to secure expansion. The introduction of the motor truck, the building of well-designed ornamental elevated railroads in the suburbs, the use of all devices for spreading the population that can be invented, must be brought to bear. There is no reason why success in the solution of this vast problem cannot be secured.